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A new genus of Rhyparochrominae from South Africa with descriptions of five new species (Hemiptera: Lygaeidae) *

by

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A new genus *Dermatinoides* is described. Five new species are described in the genus, *D. convergens* (which is the type species), *D. nervosus*, *D. quathlamba*, *D. diasi* and *D. zuurbergensis*. Notes are given on the biology and ecology of these species and descriptions of the immature stages are given for *D. convergens* and *D. nervosus*.

During field work in South Africa in 1967—1968 our party took a series of specimens of "coleopteroid" Hemiptera in the southern Cape Province and in Lesotho that are of unusual interest due to their striking superficial resemblance to such pyrrhocorid genera as *Dermatinus* Stal and *Adherris* Bergroth. Species of the two pyrrhocorid genera and of the genus described below are all ground-living, litter inhabiting insects of a dull brownish or blackish colour. The hemelytra are composed of thickened undifferentiated coriaceous pads which meet for a considerable distance along the midline, have the apical margins truncate leaving the posterior abdominal segments exposed and the membrane absent. The metathoracic wings (fig. 3,) are extremely reduced.

Despite the close resemblance to *Dermatinus* and *Adherris* in habitus the members of the present genus are unquestionably lygaeids. They possess a typical lygaeid abdominal trichobothrial pattern on sterna five and six (Scudder, 1963), wherein the anterior trichobothrial hair is located anterior to the spiracle, while the two posterior trichobothria are located together on a single elevation posterior to the spiracle (fig. 7). The female ovipositor is also typically lygaeid in the articulation of the second valvifers and valvulae (Schaefer, 1964). It is clearly a member of the sub-family Rhyparochrominae as the suture between sterna four and five is curved laterally and does not attain the lateral margin. The position of this genus in the tribe Megalonotini is evidenced by the dorsal position of abdominal spiracles three and four (figs. 2, 3) (a condition not found in any pyrrhocorid) and by the absence of a Y-suture between abdominal terga three and four in the nymphs. The lygaeids are strongly convergent with the two pyrrhocorid genera in head and pronotal shape and in either lacking ocelli or having them very much reduced.

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DERMATINOIDES gen. nov.

Type species: *Dermatinoides convergens*, spec. nov.

Head strongly tapered anteriorly, slightly declivent, ocelli absent or greatly reduced, eyes sessile, in contact with antero-lateral pronotal angles, no head trichobothria present, bucculae short, terminating in a closed "U" at level of antenniferous tubercles; pronotum sub-quadrate, lacking a well defined transverse impression, central area with a large black quadrate patch, lateral margins narrowly explanate and sharply carinate, often very slightly reflexed, posterior margin evenly and shallowly concave; scutellum lacking a median or sub-basal elevation or carina; macropters unknown; coleopters with hemelytra developed as an undifferentiated coriaceous pad, meeting broadly along meson throughout length, distal margin obliquely truncate, membrane absent, corium and clavus indistinguishable, lateral margins sharply carinate, slightly explanate; hind wings absent; metathoracic scent gland orifice elongate, slender, straight and parallel sided or slightly curved anteriorly at distal end, evaporative area covering inner 2/3 of metapleuron and narrowly present posteriorly along margin of mesopleuron, dorsal (lateral) margin straight and slightly convex; prosternum pruinose behind anterior collar-like area and as a narrow band above acetabula; metacoxae contiguous mesally; fore femora incrassate, mutic; dorsal surface thickly, evenly and conspicuously punctate; inconspicuous silvery scale-like pubescence present; antennae terete or with 2nd, 3rd and 4th segments fusiform; abdominal spiracles on segments 3 and 4 located dorsally; inner latero-tergites present on abdominal terga 3–6; abdominal sterna 4 and 5 fused, suture between sterna 4 and 5 curving laterad, not attaining lateral margin; trichobothria on sterna 5 and 6 with one trichobothrium anterior to spiracle and 2 trichobothria on one elevation posterior to spiracle and located as transverse pair; 7th female abdominal sternum completely cleft mesally; spermatheca with stem and pump differentiated and "bulb" complexly curved and convoluted with broadened distal area (figs 8, 9): ventral surface of male genital capsule foveate laterally (fig. 4, 5) and with a pair of blunt elevations on either side of midline on distal 1/3; paramere small with a short distal shaft (fig. 10), phallus with sperm reservoir sub-quadrately rounded with large laterally tapered wings (fig. 6), elongate holding sclerites and a much coiled vesica; nymphs without a Y-suture and with scent gland openings present between terga 3–4, 4–5, 5–6 (figs. 2, 3); abdominal integument of nymph mottled brown, not heavily sclerotized.

Dermatinoides does not appear to be closely related to any known genus of Megalonotini. In Slater's (1964) key to South African genera which includes both Megalonotini and Rhyparochromini it runs with some difficulty to couplet ten, but is not even in the same tribe as the two genera keyed at that point (both of which are composed of macropterous species). Actually *Dermatinoides* has a habitus most similar to such genera of Gonianotini as *Emblethis* and *Gonianotus* and the rhyparochromine genus *Rhyparothesus*. However, the resemblance is not close and is undoubtedly a convergent superficial resemblance related to procryptic coloration in adaptation to usually xeric sandy habitats. In parallel with *Emblethis*, the *Dermatinoides* nymphs are different from known Megalonotini in having the abdominal integument relatively soft and brown, not black and thickened. *Dermatinoides*, therefore, represents a very isolated megalonotine with no closely related genera known. It is another of the peculiar Cape endemics.

All of the species of *Dermatinoides* are very similar to one another in habitus and in coloration. *Dermatinoides nervosus* spec. nov. is the most isolated species and the presence of distinct raised veins on the hemelytra is plesiomorphic to the completely veinless pads of the other species. However, *D. nervosus* cannot be directly ancestral to the other species since the development of scale like body hairs, the reduction in length and diameter of the third antennal segment, the irregular spermathecal bulb, and the sub-marginal position of the connexivum (fig. 3,) are all apomorphic features. Although *D. nervosus* could reasonably be accorded generic rank, such an action would tend to obscure the close systematic relationships of these "Cape" species and their isolation from other Megalonotini.

Dermatinoides shows a distribution in South Africa similar to that of a number of other lygaeid genera that are characteristic components of the Cape floral area. Examples are *Notiocola* Slater and Sweet and *Melanostethus* Stal. These genera include species that are confined in distribution to the southern Cape with related species occurring at high elevations in the Drakensberg Mountains of Lesotho and Natal. Such distributions appear to be evidence of a much wider extension of the Cape vegetation in the past, probably during cool pluvial periods. The fragmentation of this flora at present, leaves relict populations isolated in the Drakensberg.

It is doubtful that macropters occur in any species of the genus, as in the entire series of several species before us the hemelytra are uniformly coriaceous without a trace of membrane or separation of the clavus and corium. The metathoracic wing is extremely reduced (fig. 3,). Flightlessness and the development of brachyptery and coleoptery is a common phenomenon in ground living Lygaeidae in the southern Cape. We believe this to be indicative of the long time stability and habitat permanence of this interesting area.

In the following text, all measurements are in millimeters. The abbreviations "S.S.S.S." in the locality data refer to J. A. Slater, Samuel Slater, T. Schuh and M. H. Sweet.

KEY TO SPECIES

1 Hemelytra with veins raised above surface as distinct ridges; connexival lateral suture sub-marginal (fig. 3); body surface clothed with white, flattened, scale-like hairs; 3rd antennal segment short and slender, not more than ½ length of segment 2 and only slightly longer than segment 1 . . . . . **nervosus**

— Hemelytral surface smooth with no evidence of raised ridge-like veins; lateral connexival suture marginal (fig. 2); body surface lacking conspicuous flattened scale-like hairs; 3rd antennal segment ¼ or more longer than segment 1 and much more than ½ as long as segment 2 2

2 Antennae uniformly black, relatively short and stout; length of 2nd antennal segment 6 times distal width 3

— Antennae with at least segments 2 and 3 reddish brown or yellowish, relatively slender and elongate; length of 2nd antennal segment 8 times distal width 4

3 Elongate bristle-like hairs present on antennal segment 2, extending at right angle to length of segment throughout; 3rd antennal segment at least ½ as long as width across eyes; hemelytra shorter, not attaining abdominal tergum 6 . . . . . **quathlamba**

— Elongate bristle-like hairs on antennal segment 2 usually confined to distal ½; length of 3rd antennal segment much less than ½ width of head across eyes; hemelytra usually more elongate, extending posteriorly to cover extreme antero-lateral portion of abdominal tergum 6 . . . . . **convergens**

4 Antennal segments 2 and 3 dark reddish brown, segments 1 and 4 blackish; 2nd antennal segment lacking erect hairs set at right angles to length of segment except at extreme distal end; pale central area of scutellum interrupted by a black median stripe . . **diasi**

— All antennal segments uniformly yellowish; 2nd antennal segment possessing elongate hairs at least on distal $\frac{1}{2}$ to $\frac{2}{3}$ of segment; pale central area of scutellum not interrupted by a median black stripe . . . . . **zuurbergensis**

DESCRIPTIONS

Dermatinoides quathlamba spec. nov. figs. 1, 2, 9

General coloration brownish testaceous, marked with black as follows: head, a large quadrate patch covering most of pronotum, strongly concave along its anterior margin, mesal spot along anterior pronotal margin, 4 vague rays near posterior margin, large triangular area on antero-lateral portion of scutellum extending to meson along anterior margin, a narrow median dark scutellar stripe, small irregular hemelytral maculae, abdominal sterna, thoracic sterna and pleura except posterior lobes of propleura and metapleura and acetabula which are testaceous, femora with exception of extreme distal ends, all antennal segments; anterior "collar-like" area of prosternum dark reddish brown; coxae and trochanters black to dark red-brown; exposed posterior

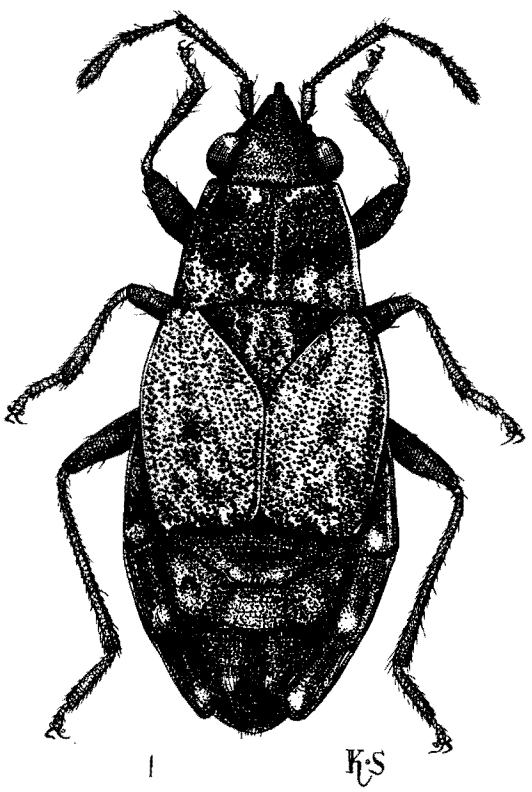


Fig. 1. *Dermatinoides quathlamba* spec. nov., dorsal view.

abdominal terga reddish brown with darker brown to black area along meson and laterally on connexivum, latter with a distinct yellow macula just before posterior margin of connexival terga 5, 6 and 7 and a yellow macula on either side of midline at lateral edge of scent gland scar between terga 5 and 6; surface dull to slightly subshining; surface appearing nearly glabrous but with scattered short scale-like hairs present, particularly on head and laterally on pronotum.

Head acuminate, tylus attaining distal 1/3 of 1st antennal segment, vertex slightly convex, particularly anterior to eyes, latter sessile, extending somewhat laterad of antero-lateral pronotal angles, length head 0,90, width 1,10, interocular space 0,64; pronotum with lateral margins nearly straight and evenly narrowing from humeral angles to anterior margin, slightly sinuate at level of posterior margin of black area, immediately behind which faint indications of a transverse suture present laterally, length pronotum 0,88, width 1,48; length scutellum 0,72, width 1,0; hemelytra with lateral margins broadly and evenly arcuate, posterior margin truncate and angled dorso-mesad from lateral angle, the latter extending over anterior ½ of lateral portion of abdominal tergum 5, length hemelytron 1,66; abdomen broadly ovoid-elliptical (fig. 2) suture between terga 5 and 6 curving strongly caudo-mesad from lateral margin to scent gland scar; labium attaining or nearly attaining mesocoxae, 1st segment remote from base of head, length labial segments I 0,60 II 0,58 III 0,40 IV 0,30; antennae prominent, robust, 2nd and 3rd segments sub-equal in width, slightly enlarged from proximal to distal ends, bearing prominent bristle-like hairs throughout which are as long or longer than diameter of segment, length antennal segments I 0,30 II 0,74 III 0,58 IV 0,74; total length 4,60.

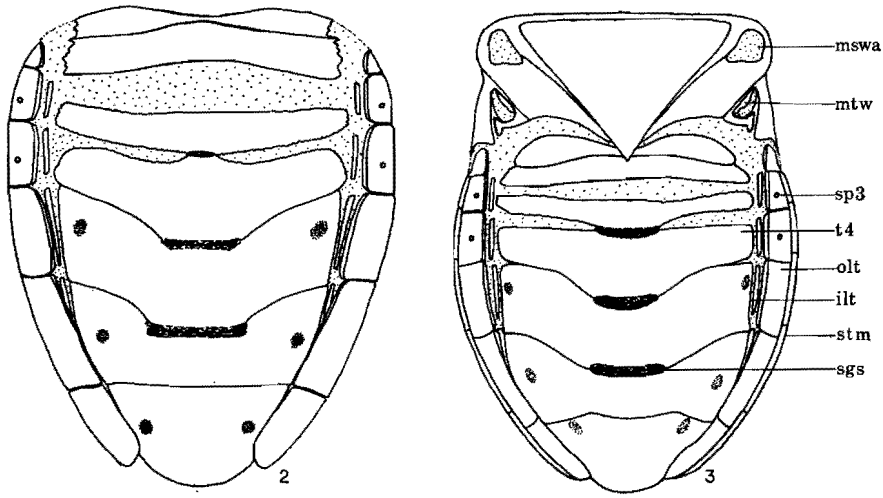
MATERIAL EXAMINED. Holotype: ♂ LESOTHO: Sani Pass, 8 000′ (2 440 m), 10 March 1968 (J. Munting, S. Slater, T. Schuh, M. Sweet No. 215). In National Collection of Insects, Pretoria.

Paratypes: 13 ♂, 18 ♀, same data as holotype. In National Collection of Insects, Pretoria; J. A. Slater and M. H. Sweet collections.

Additional material: 1 specimen without abdomen from Cathedral Peak Forestry Reserve, SOUTH AFRICA, Natal, Drakensberg, March 1959 (B. R. and P. J. Stuckenberg) at Organ Pipes Pass at summit, *Erica consocies*, 9 600′ (2 925 m) (South African Museum, Capetown).

This is a relatively testaceous species most closely related to *convergens* but readily distinguishable by the characters given in the preceding key and in the discussion of the latter species.

NOTES: *D. quathlamba* was collected at 2 440 m along the Sani Pass Road on the Drakensberg escarpment near the Lesotho border. The collection site was described in detail by Slater & Sweet (1970). There was an abundant ground lygaeid fauna of eight species, some of which, like *D. quathlamba*, exhibited brachyptery, indicating that the habitat probably was relatively permanent despite its sub-climax appearance. *D. quathlamba* was present in an estimated abundance of five to six per square meter in moist dense litter usually under *Helichrysum* sp. The brown mottled coloration of the insects was effectively procryptic against the debris covered ground. The insects tended to "freeze" and not run until directly touched, in contrast to the other species which ran immediately when disturbed. Only adults were present and no mating was observed in the field in contrast to the other lygaeid species present. In the laboratory, the insects



Figs. 2–3. *Dermatinoides* spp. 2. *Dermatinoides quathlamba* spec. nov., ♂ abdominal terga, dorsal view. 3. *Dermatinoides nervosus* spec. nov., ♂ pterygonota and abdominal terga, dorsal view: mswa—mesothoracic wing articulation; mtw—metathoracic wing; sp3—spiracle of segment 3; t4—tergum 4; olt—outer latero-tergite; ilt—inner latero-tergite; stm—sternal margin; sgs—scent gland scar.

fed sparingly for several months on *Papaver*, *Helichrysum* and sunflower seeds, but were not seen to mate and laid no eggs.

Dermatinoides zuurbergensis spec. nov.

General shape and colour very similar to *quathlamba* but pale central area of scutellum lacking a median black vitta, an obscure darkened spot in middle of this pale area; antennae uniformly light yellowish brown; legs also light brown but femora, particularly fore femora, somewhat infuscated with darker coloration; below dark chocolate brown to nearly black on head and thorax, prominently pale on explanate portions of hemelytron and pronotum; pruinose on prosternum except for anterior 1/3, pruinosity extending above non-pruinose acetabula and curving anteriorly to reach pale explanate area of prothorax; elongate upstanding hairs present on distal 2/3 of 2nd antennal segment and entire length of 3rd and 4th segments; punctures each with small silvery somewhat scale-like hair present, these not markedly flattened as in *nervosus*.

Head broad, wider across eyes than across anterior margin of pronotum, moderately convex across vertex; very reduced minute ocelli present, acuminate anteriorly with tylus almost attaining distal end of 1st antennal segment, length head 0,92, width 1,19, interocular space 0,70; pronotum as in other species, lateral margins narrowly explanate and evenly, very slightly convexly narrowing from humeri to antero-lateral margin, posterior margin shallowly concave, length pronotum 0,92, width 1,60; length scutellum 0,80, width 1,12; coriaceous hemelytra without indication of veins, lateral margins narrowly explanate and arcuately rounded, extending posteriorly to antero-lateral corner of abdominal tergum 6, apical margin obliquely truncate;

length hemelytron 2,0; metathoracic scent gland orifice slender, slightly curving anteriorly at distal end, evaporative area occupying inner 2/3 of metapleuron, laterally truncate; labium reaching mesocoxae, 1st segment not attaining base of head, length labial segments I 0,56 II 0,62 III 0,42 IV 0,36; antennae slender, terete, length antennal segments I 0,30 II 0,82 III 0,61 IV 0,68 total length 5,0.

MATERIAL EXAMINED: Holotype: ♀ SOUTH AFRICA, Cape Province: 1 ml. (1,6 km) S. of Zuurberg Pass Summit 1 800 ft. (550 m.) 15 Feb. 1968 (T. Schuh and M. H. Sweet No. 196). In National Collection of Insects, Pretoria.

Paratype: 1 ♀ same data as holotype. Cape Province: 1 ♂ Algoa-bay Capland, 5.6.97 (Dr. H. Brauns). In M. H. Sweet and J. A. Slater collections.

This species is most closely related to *convergens*, but readily distinguishable by the much more slender and elongate yellowish brown antennae. The pale coloration of the antennae, the lack of a median dark stripe on the scutellum and the paler femora will readily separate it from the latter.

NOTES: The Zuurberg type locality was at 550 m, just above the Addo succulent bush of *Euphorbia*, *Aloe* and *Portulacaria* and dominated by small trees, especially *Acacia karroo* Hoyd. and *Rhus* spp. This type of vegetation is termed the grassy mountain scrub by Acocks (1953) and considered as transitional to the fynbos of the mountains in the eastern Cape region. The collecting site was a roadside area covered with a low, approximately one metre, growth of the shrub *Cliffortia linearifolia* Eckl. & Zeyh. and the tall composite *Helichrysum cymosum* (L.) Less. The soil was very dry and cracked, and the bugs were restricted to shaded microsites in thin litter at the bases of *Cliffortia* in the partial shade of *Rhus undulata* Joeq. In two hour's searching through about 15 square meters only two specimens of *D. zuurbergensis* were found along with a more abundant undescribed species of *Plinthisus*.

Dermatinoides convergens spec. nov.

General shape and colour very similar to *quathlamba;* clothed obscurely but more prominently on head with decumbent silvery somewhat flattened pubescence but pubescence relatively slender, not broad and flattened as in *nervosus;* abdomen bright reddish brown with a prominent yellow marginal patch adjacent to caudo-lateral angles of each abdominal sternum; femora dark chocolate brown, tibiae sordid brownish testaceous, 1st and 2nd tarsal segments testaceous, 3rd segment dark brown.

Head relatively short and broad, tylus extending to distal 1/3 of 1st antennal segment, only slightly convex across vertex, length head 0,78, width 1,18, interocular space 0,68; pronotum sub-quadrate, lateral margins slightly rounded and moderately tapering from humeri to antero-lateral angles, faintly foveate behind black patch somewhat nearer lateral margin than meson, length pronotum 0,94, width 1,58; length scutellum 0,74, width 1,0; hemelytra relatively elongate, extending well onto antero-lateral portions of abdominal tergum 6, lateral margins broadly and evenly arcuate, posterior margin truncate, slightly angled antero-mesad from lateral angles, length hemelytron 1,96; 7th abdominal tergum broadly depressed mesally; metacoxae nearly contiguous mesally; labium reaching mesocoxae, 1st segment remote from base of head, length labial segments I 0,50 II 0,52 III 0,42 IV 0,36; antennae relatively thick and heavy, densely clothed with decumbent pubescence, 3rd and 4th segments bearing elongate bristle-like hairs throughout, those on segment 2 confined to distal ½ to ⅓,

2nd and 3rd segments slightly clavate, length antennal segments I 0,30 II 0,64 III 0,42 IV 0,60; total length 4,40.

MATERIAL EXAMINED: Holotype: ♂ SOUTH AFRICA, Cape Province: just E. of Knysna, 9 Feb. 1968 (S.S.S.S.). In National Collection of Insects, Pretoria.

Paratypes: 4 ♂ 12 ♀ Cape Province: 2 miles (3 km) S. Goukamma, Knysna, 8 Feb. 1968 (S.S.S.S.)—2 ♂, 1 ♀ Knysna Heads, 9 Feb. 1968 (S.S.S.S.)—4 ♂, 3 ♀ E. Knysna Heads El. 200′ (60 m), 22 Nov. 1967 (M. H. Sweet)—1 ♂, 2 ♀ 6 mi. (9,6 km) E. Plettenberg Bay, El. 500′ (150 m), 12–13 Feb. 1968 (S.S.S.S.)—1 ♂ Grahamstown, 2 Dec. 1959 (E. McC. Callan)—2 ♂ same, 24 Nov. 1960—1 ♀ same, 13 Dec. 1958. In National Collection of Insects, Pretoria; Transvaal Museum; South African Museum, Cape Town; M. H. Sweet and J. A. Slater collections.

Additional specimen examined: 1 ♀ Cape Province: Papiesfontein, Gamtoos Mtd. 7,60 (South African Museum, Capetown).

This species is most closely related to *quathlamba* but is a somewhat more robust species with a more ovoid, less elliptically tapering abdomen. The head is relatively shorter and less acuminate and the antennae are quite different, being more robust with a much shorter third antennal segment and the second segment lacking elongate bristle-like hairs on the proximal third to one-half. The eyes are more prominent and globose in this species than in *quathlamba* and there is a more marked tendency toward a rounded, arcuate lateral pronotal margin. In the present series of brachypters, all the specimens of *convergens* have the hemelytra more elongate than do those of *quathlamba*, extending onto the sixth abdominal tergum and completely covering the fifth tergum laterally. *Convergens* also tends to be a more extensively darkened species than *quathlamba* although the colour patterns are very similar in the two. The two males from Grahamstown taken on December 24, 1960, are stated on the labels to have been taken "in flight." This must be in error as they are typical brachypters and incapable of flight. The male taken at Grahamstown on December 2, 1959, has the left antenna oligomerous. The antenna is three segmented and approximately equal in length to the normal right antenna. The second segment is considerably longer than normal and the third (terminal) segment is very large and fusiform. It appears that the usual third segment has contributed elements to both distal segments.

NOTES: *D. convergens* was collected in macchia (fynbos) vegetation which, around Knysna, was sub-climax to temperate forest, unlike other areas in the Cape floral vegetation region where the macchia was dominant. These communities were in late successional stages, well-invaded by fynbos shrubs but with grassy semi-open microsites still present. At each locality the soil was a soft sandy loam. At Knysna Heads the insects were found on a gentle slope among clumps of the grass *Pentaschistis angustifolia* Stapf. under the shrubs *Erica versicolor* Wend. and *E. floribunda* Lond. in company with ten other species of rhyparochromines. At the site two miles south of Goukomma, *D. convergens* was found on a grassy bank somewhat disturbed by occasional fires but dominated by a fynbos assemblage of low shrubs, especially *Ursinia scariosa* (Ait.) Poir and *Erica maesta* Bol.. *D. convergens* occurred here in an estimated abundance of about four to five per square meter among 12 other rhyparochromine species. At Groote River Pass, another fire-disturbed grassy area with low *Erica* and *Leucodendron* shrubs dominant, a few specimens were collected near *Erica discolor* Andr. There were 12

other rhyparochromines, all present in similar low numbers. Most of the associated lygaeid species showed pterygo-polymorphism which indicates a relatively stable habitat (Sweet 1964). At Knysna Heads, on Nov. 22, the population consisted of adults and first to third instars from which one adult was reared. In February only adults were found but eggs and early instars were produced in the laboratory. This probably indicates at least a bivoltine life cycle. The adults oviposited readily in soil substrate and under bits of litter. All stages fed readily on sunflower seeds as well as seeds of *Erica* and the composite *Relhania calycina* (L.f.) Druce.

Description of Nymphs

Fifth instar: (alcohol) East Knysna Head, 22.xi.1967 (M.H.S.)

Head large, quadrate, calli patches on pronotum and elliptical areas at antero-lateral margins of scutellum dark chocolate brown, remainder of pronotum, scutellum, wing pads and all appendages bright tan; 1st antennal segment darker than succeeding; 4 pale testaceous spots present near posterior margin of pronotum; hemelytra with an elongate pale longitudinal stripe just within explanate margin, a 2nd oblique dash near middle of wing pad and a shorter lobate pale patch adjacent to scutellum; abdomen grey, profusely sprinkled over entire surface with pale testaceous spots giving a "freckled" appearance to surface; abdominal sterna 6, 7 and 8 with prominent mesal dark brown elliptical patches present; sutures between tergal segments 3–4, 4–5 and 5–6 narrowly marked with crimson; anterior scent gland sclerotization between terga 3–4 much smaller than that between 4–5 and 5–6; sclerites about all orifices narrow, linear, dark chocolate brown (the actual anterior gland is probably obsolete: the gland openings between 4–5 and 5–6 are large and the glands visible through the body wall as reddish sacks, but there appears to be no sack connecting the opening between terga 3–4); legs pale on trochanters, distal ends of femora and somewhat lighter along tarsi; lateral explanate margins of pronotum and wing pads pale testaceous; head, pronotum and wing pads bearing inconspicuous short somewhat scaley hairs, much less prominent than in adults.

Head very slightly declivent anteriorly, eyes large, rounded, almost in contact with antero-lateral pronotal margins, epicranial stem extremely short, length head 0,81, width 1,08, interocular space 0,61; pronotum sub-quadrate, lateral margins strongly and sharply explanate and only moderately but evenly narrowing from humeri to anterior margin, posterior margin straight, length pronotum 0,72, width 1,40; wing pads short and broad, extending only over anterior portion of 2nd abdominal tergum, lateral margins sharply explanate, pads very bluntly almost truncately rounded apically, length wing pads 0,94; abdomen obovate, no Y-suture present, length abdomen 2,10; femora strongly incrassate, mutic, but covered with tiny crenulate-like serrations; labium reaching mesocoxae, 1st segment much shorter than head, length labial segments I 0,46 II 0,50 III 0,34 IV 0,28; antennae stout, not terete or slightly fusiform, length antennal segments I 0,18 II 0,48 III 0,34 IV 0,56; total length 4,33.

Fourth instar: same data as above.

Very similar in form and structure to preceding, colour of head not appreciably darker than that of pronotum and wing pads, latter with pale striping much reduced and inconspicuous; length head 0,60, width 0,86, interocular space 0,52; length pronotum 0,52, width 1,06; length wing pads 0,54; length abdomen 1,80; length labial segments I 0,38 II 0,36 III 0,26 IV 0,28; length antennal segments I 0,16 II 0,34 III 0,30 IV 0,42; total length 3,42.

Third instar: as preceding.

Similar to instar 5 but abdomen and appendages with a somewhat reddish cast; 4th antennal segment with distal $\frac{1}{2}$ to $\frac{2}{3}$ pale testaceous to almost whitish; no pale spots or stripes on pronotum and wing pads; dark mesal patches on sterna 6, 7 and 8 very small, sub-triangular and restricted to antero-mesal portion of each sternum; length head 0,52, width 0,70, interocular space 0,42; length pronotum 0,40, width 0,80; length wing pads 0,30; length abdomen 1,24; length labial segments I 0,30 II 0,26 III 0,18 IV 0,22; length antennal segments I 0,12 II 0,25 III 0,22 IV 0,36; total length 2,50.

Dermatinoides diasi spec. nov.

General form and colour very similar to *quathlamba;* antennal segments 1 and 4 dark chocolate brown to nearly black, segments 2 and 3 reddish brown becoming darker at distal ends; femora black with extreme distal ends light tan, tibiae and tarsi light yellowish brown, somewhat darkened at proximal ends; each puncture bearing a very small inconspicuous silvery, very slightly flattened hair; 2nd antennal segment with only short, decumbent pubescence, becoming somewhat longer at extreme distal end; 3rd and 4th segments with larger more upstanding hairs but these still declivent, curving distally.

Head elongate, tapering, reaching to distal ¼ of 1st antennal segment, only slightly convex across vertex; obscure vestigial ocelli present; length head 0,92, width 1,14, interocular space 0,64; pronotal shape similar to *quathlamba,* narrowly explanate along lateral margins which are somewhat sinuate and relatively strongly tapered from humeri to antero-lateral angle, not convexly rounded as in *convergens* and *zuurbergensis;* posterior margins shallowly concave, length pronotum 1,02, width 1,7; scutellum with a prominent broad median dark vitta, length scutellum 0,90, width 1,18; hemelytra without visible veins, lateral margins broadly arcuate, apical margin obliquely truncate, extending over extreme antero-lateral corners of 6th abdominal tergum, length hemelytron 2,06; below with pruinosity pattern similar to that of *zuurbergensis;* metathoracic scent gland auricle slender, strap like, straight, evaporative area as in *zuurbergensis;* labium extending to mesocoxae, 1st segment remote from base of head; length labial segments I 0,60 II 0,62 III 0,46 IV 0,44; antennae with 2nd, 3rd and 4th segments very slender, 2nd and 3rd evenly terete, length antennal segments I 0,37 II 0,83 III 0,56 IV 0,76; total length 5,40.

MATERIAL EXAMINED: Holotype: ♀ SOUTH AFRICA, Cape Province: Dutoit's Kloof east slope, El. 2 000 ft. (610 m), 23 Oct. 1967 (M. H. Sweet No. 51). In National Collection of Insects, Pretoria.

Paratype: 1 ♀ Cape Province: Kirstenbosch Bot. Gar. Cycad Gardens Dec. 6, 1967 (M. H. Sweet No. 102). In J. A. Slater collection.

This is a rather large species with a habitus most similar to *quathlamba.* It resembles *quathlamba* particularly in the shape of the pronotum, the lateral margins being straighter and more strongly tapered and not distinctly arcuate. However, the antennae are much more slender and elongate and the second segment completely lacks the prominent elongate hairs that in *quathlamba* cover the entire segment and project at right angles to the length of the segment. This species is named in honour of Bartholomeu Diaz, the first man to sail around the Cape of Good Hope.

NOTES: This is evidently a rare species in the southwestern Cape but its presence is significant as it is morphologically much more closely related to the species of the eastern sector of the Cape vegetation region than to the sympatric *D. nervosus.* The two collection localities of Du Toit's Kloof and the Kirstenbosch were very similar habitats. Both were small "grassy" breaks in the thick tall fynbos of *Protea, Leucospermum,* tall *Erica* and *Restio* where *D. diasi* was found on the ground with *Sweetolethaeus macchiaensis* Slater, *Plinthisus rudbeckii* Slater, small *Plinthisus* spp., and species of a new genus related to *Lasiosomus.* The rarity of this species is apparently not a collecting artifact as this type of habitat was frequently visited in search of *Paracnemodus* and the

Kirstenbosch area was searched intensively for many hours. In the southwest Cape the two sympatric species occupy quite different habitats: *D. nervosus* in open well illuminated bare ground sites; *D. diasi* in a relatively closed tall fynbos shrub community. The female from DuToit's Kloof lived only a month and laid only five eggs, of which three hatched. The adult fed readily on *Erica* and composite seeds.

Dermatinoides nervosus spec. nov. figs. 3, 4–8, 10

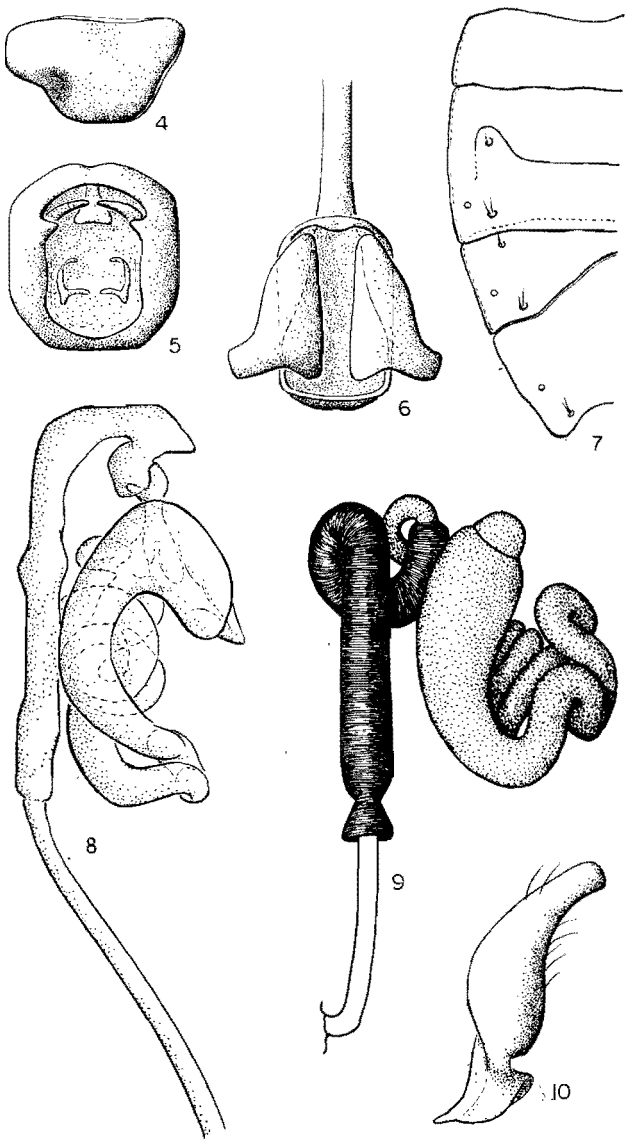
General form and coloration similar to that of *quathlamba;* pronotum with central black area less intensively developed, becoming brown along midline, black markings more extensive adjacent to lateral and posterior margins, central black area distinctly margined with a somewhat laevigate orange marginal stripe; acetabula dark brown to nearly black; posterior margin of propleuron with very narrow pale testaceus markings; antennae dark reddish brown; fore femora black, fore tibiae dark brown, tarsi somewhat testaceus; abdomen reddish brown rather than black, lateral margins with a pale yellow spot at caudo-lateral angle of each segment; body surface clothed with very conspicuous white flattened scale-like hairs.

Head short, moderately declivent, much less acuminate than in *quathlamba*, only slightly convex across vertex, length head 0,66, width 1,08, interocular space 0,62; pronotum sub-quadrate, posterior margin shallow and evenly concave, lateral margins straight, evenly tapering from humeral angles to antero-lateral margin, completely lacking sinuations, length pronotum 0,78, width 1,32; scutellum with surface somewhat irregular but lacking a distinct median elevation, length scutellum 0,72, width 0,92; hemelytra with lateral margins very broadly and arcuately rounded, extending far beyond lateral margins of pronotum, all veins on hemelytral pad elevated, subcarinate, apex of hemelytra truncate, angled slightly antero-mesad from caudo-lateral angle which laterally almost attains posterior margin of abdominal tergum 5, length hemelytra 1,54; 7th abdominal tergum elevated laterally with a broad prominent mesal trough-like depression; metacoxae nearly contiguous mesally; labium extending to mesocoxae, 1st segment remote from base of head, length labial segments I 0,48 II 0,50 III 0,38 IV 0,36; antennae terete with 4th segment fusiform, 3rd segment noticeably more slender than segment 2 and with prominent bristle-like hairs over entire surface, 2nd segment with bristle-like hairs confined to distal portion, length antennal segments I 0,28 II 0,65 III 0,30 IV 0,54; total length 3,80.

MATERIAL EXAMINED: Holotype: ♂, SOUTH AFRICA, Cape Province: Red Hill, Cape Penin., El. 900′ (275 m). 15 Sept. 1967 (M. H. Sweet No. 2). In National Collection of Insects, Pretoria.

Paratypes: 11 ♂, 12 ♀ same data as holotype, Cape Province: 1 ♂ Cape Town near Twelve Apostles, X–20–1950 (Brinck and Rudebeck)—1 ♂, 1 ♀ Hout Bay, Cape Peninsula, 23 Jan. 1968 (S.S.S.S.)—5 ♂, 1 ♀ Cape Point Nature Res. 22 Jan. 1968 (S.S.S.S.)—1 ♀ same locality, 15 Sept. 1967 (M. H. Sweet)—1 ♂ 6,5 mi. (10 km) N. Cape Point, Cape Point Nat. Reserve, 7 Dec. 1967 (M. H. Sweet)—1 ♂ Signal Hill El. 1 100′ (335 m) Cape Penin. 9 October 1967 (M. H. Sweet)—1 ♂ Du Toits Kloof, 16 km W. Worcester El. 875′ (265 m), 23 Oct. 1967 (M. H. Sweet—7 ♂, 32 ♀ Somerset West, Feb. 1930 (A. J. Hesse). In National Collection of Insects, Pretoria; South African Museum, Capetown; Lund University; M. H. Sweet and J. A. Slater collections.

We have also examined a male for chromosome analysis from base of Elandskloof, 10 mi. (16 km) S. Citrusdal I–28–1968 (S.S.S.S.)



Figs. 4–10. *Dermatinoides* spp. 4–8. *Dermatinoides nervosus* spec. nov. 4. ♂ genital capsule, lateral view. 5. ♂ genital capsule, dorsal view. 6. ♂ sperm reservoir, dorsal view. 7. Abdomen, left side, ventral view. 8. Spermatheca. 9. *Dermatinoides quathlamba* spec. nov., spermatheca. 10. *Dermatinoides nervosus* spec. nov., paramere, lateral view.

This is a very distinct species by virtue of the raised, somewhat carinate or sub-carinate veins on the coriaceous hemelytra and by the relatively very short and slender third antennal segment. The species also has a dense, prominent covering of flattened silvery scale-like hairs. Most specimens possess a foveate area posteriorly on the pronotum somewhat nearer the lateral margin than the meson. Although the type has the lateral pronotal margin straight, in most specimens there is a slight sinuation at the level of the posterior margin of the dark dorsal patch. In many specimens the truncate apex of the hemelytron is almost straight across rather than angled antero-mesad.

NOTES: *D. nervosus* was found in the southwest Cape in open gravelly sites within the natural Cape macchia (fynbos) vegetation, especially on white gravelly soil derived from Table Mountain sandstone. Such open sites were natural wind breaks, successional stages progressing from former fires, areas of thin soil along barren ridges, and occasionally even roadsides, if within a fynbos area. Very similar sandy but disturbed areas dominated by introduced European plants were devoid of the insects, nor could the insects be found along beach dunes, backbeaches, or on Cape Flat areas. The habitat selection of *D. nervosus* for such discontinuous and sub-climax bare areas must pose an interesting problem in dispersal since all known specimens are brachypterous, as are the other species of *Dermatinoides*. This question especially applies to *D. nervosus* since the known habitats of the other species were later successional areas, usually grassy heaths. The most carefully studied population was on Red Hill (altitude 200 m), an open gently sloping summit overlooking False Bay and Simonstown. The soil, much of it exposed, was white sandy gravel derived from Table Mountain sandstone and was dry and overdrained. Much of the shrubby macchia had been burnt some time ago, and the successional stage was mostly dominated by Restionaceae. An area near the road had been more protected and this supported a rich Cape vegetation of low shrubs and herbs. At this latter area *D. nervosus* was found.

D. nervosus was characteristically seen running on the open gravelly ground where the brown-mottled adults and nymphs blended very well with the soil, much like species of the similarly coloured but unrelated Holarctic genus *Emblethis*. The insects showed little tendency to shelter under plants or to group together and had an average abundance of about four to six per square meter in September, increasing to about 10–15 per square meter in December. Only adults were found present from September 15 to October 26 with some adults seen mating in the field on October 15th. By December 5 all instars were present in the field. On January 30 only adults were present. In the laboratory the reproductive pattern paralleled the field observations. Although the insects fed readily on sunflower seeds, peanuts, and unidentified composite seeds, no eggs were laid between September 15 and October 23, after which time numbers of eggs were laid. The eggs were laid among sand grains and under bits of litter. While copulation lasted for at least several hours, the courtship behaviour was not observed. The nymphs fed readily on various seeds, including *Hermannia* seeds, and some were reared from egg to adult, although there was considerable mortality. Adults reared in the laboratory in December, and field collected adults in January, did not become reproductive in the laboratory although kept alive until April 15. This reproductive pattern is consistent with a univoltine life cycle. On October 2nd and 3rd two tachinid parasites emerged from adults collected on September 15 and pupated. One adult parasite was obtained which closely resembled *Catharosia* which parasitizes Nearctic lygaeid bugs.

Description of Nymphs

Fifth instar: (alcohol) Red Hill, Cape Peninsula, 15.ix.1967 (M.H.S.).

General form and colour very similar to *convergens* but with pale markings on posterior area of pronotum; wing pads broader and more prominent; pronotum with lateral area just within margin broadly pale, strongly contrasting with dark brown central area of pronotum; scent gland orifices surrounded only by an extremely narrow rim of dark chocolate brown sclerotization, orifices between terga 3 and 4 almost as wide as those between 4–5 and 5–6, relatively much broader than in *convergens;* pleuron a relatively darker colour than in *convergens;* antennal segment 1 dark chocolate brown, 2 and 3 dull yellowish, 4 appreciably darker; length head 0,70, width 0,90, interocular space 0,34; length pronotum 0,62, width 1,17; length wing pads 0,74; length abdomen 1,46; length labial segments I 0,36 II 0,39 III 0,32 IV 0,28; length antennal segments I 0,22 II 0,47 III 0,26 IV 0,43; total length 3,30.

Third instar: same data as above.

Similar to 5th instar but with pronotum, wing pads and scutellum nearly uniformly dark chocolate brown; 4th antennal segment little darker than 3rd; length head 0,52, width 0,56, interocular space 0,36; length pronotum 0,32, width 0,72; length wing pads 0,20; length abdomen 0,92; length labial segments I 0,26 II 0,22 III 0,18 IV 0,19; length antennal segments I 0,12 II 0,21 III 0,14 IV 0,32; total length 1,90.

Second instar: same data as above.

Similar to 3rd instar in form and colour, abdomen with a somewhat more reddish cast; antennal segments nearly uniformly light brown; legs appreciably lighter than in later instars; length head 0,36, width 0,44, interocular space 0,29; length pronotum 0,20, width 0,48; length abdomen 0,72; length labial segments I 0,17 II 0,14 III 0,13 IV 0,18; length antennal segments I 0,08 II 0,12 III 0,10 IV 0,26; total length 1,42.

First instar: same data as above.

Somewhat mutilated but head and pronotum dark chocolate brown; abdomen red with well developed dark scent gland sclerites, that between 3 and 4 equal in width to succeeding; length head 0,32, width 0,40, interocular space 0,28; length pronotum 0,18, width 0,44; total length labium 0,64; length antennal segments I 0,07 II 0,13 III 0,10 IV 0,22.

Egg: same data as above.

Very short, stout, lacking surface hairs; anterior end nearly truncate with a close set circle of 7 very short rounded chorionic processes, length 0,50 width 0,20.

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